WHAT IS CLAIMED IS:

1. An X-ray computer tomography apparatus, comprising:

an X-ray source configured to irradiate X-rays onto an object to be examined;

an X-ray detection unit configured to detect X-rays transmitted through the object;

a driving unit configured to rotate at least one of the X-ray source and the X-ray detection unit around the object;

an image data generation unit configured to generate image data on the basis of projection data using the X-ray detection unit;

a ROI setting unit configured to set up a region of interest (ROI) in first image data from the image data generation unit, prior to injecting a contrast medium into the object;

a CT value calculating unit configured to calculate computer tomography (CT) values in the region of interest being set in second image data from the image data generation unit, on the basis of positional information of the region of interest, the second image data being generated plural times after injecting the contrast medium into the object; and

a CT value display unit configured to display changes of CT values with time calculated by the CT

value calculating unit.

    2. The X-ray computer tomography apparatus according to claim 1, further including a threshold setting unit configured to set at least one threshold value for the CT values and a CT value comparing unit configured to keep comparing the CT values calculated by the CT value calculating unit with the threshold value, and wherein the CT value display unit displays timing signal at which the CT values calculated by the CT value calculating unit become substantially equal to the threshold value set by the threshold setting unit.

    3. The X-ray computer tomography apparatus according to claim 2, wherein the threshold value set by the threshold setting unit is at least one of CT values, a variation magnification factor of the CT values and a gradient of the changes of CT values with time.

    4. The X-ray computer tomography apparatus according to claim 1, further including an irradiation condition setting unit configured to set a X-ray irradiation condition under which the X-ray source irradiates X-rays onto the object, wherein the irradiation condition setting unit modifies the X-ray irradiation condition during generation of the second image data.

    5. An X-ray computer tomography apparatus

comprising:

an X-ray source configured to irradiate X-rays into an object to be examined;

an X-ray detection unit configured to detect X-rays transmitted through the object;

a driving unit configured to rotate at least one of the X-ray source and the X-ray detection unit around the object;

an image data generation unit configured to generate image data on the basis of projection data using the X-ray detection unit;

a ROI setting unit configured to set up a region of interest in first image data from the image data generation unit, prior to injecting a contrast medium into the object;

a CT value calculating unit configured to calculate CT values in the region of interest being set in second image data from the image data generation unit, on the basis of positional information of the region of interest, the second image data being generated plural times, after injecting the contrast medium into the object;

a threshold setting unit configured to set at least one threshold value for the CT values;

a CT value comparing unit configured to keep comparing the CT values calculated by the CT value calculating unit with the threshold value set by the

threshold setting unit and to generate a coincidence signal when both substantially agree; and

an irradiation condition setting unit configured to set conditions of the X-ray irradiation on the basis of an output signal from the CT value comparing unit.

6. The X-ray computer tomography apparatus according to any one of claims 4 and 5, wherein the irradiation condition setting unit sets a first irradiation condition under which low-dose X-rays are irradiated and a second irradiation condition under which high-dose X-rays are irradiated.

7. The X-ray computer tomography apparatus according to claim 6, wherein the irradiation condition setting unit sets irradiation conditions for first scanning under the first irradiation condition, second scanning under the second irradiation condition, and third scanning under the first irradiation condition during generation of the second image data.

8. The X-ray computer tomography apparatus according to claim 7, wherein the irradiation condition setting unit change to the irradiation condition for the second scanning when a CT value in image data obtained by the first scanning has reached a first threshold value and change to the irradiation condition for the third scanning when a CT value in image data obtained by the second scanning has reached a second threshold

value.

9. The X-ray computer tomography apparatus according to claim 1, wherein the ROI setting unit sets plural regions of interest in first image data distinguishably, and wherein said CT value display unit displays changes of the CT values with time obtained in the regions of interest in a corresponding manner to the regions of interest.

10. The X-ray computer tomography apparatus according to any one of claims 1 and 5, wherein the ROI setting unit resets the region of interest using the second image data.

11. The X-ray computer tomography apparatus according to any one of claims 1 and 5, wherein the CT value calculating unit calculates plural CT values, in pixels, in the region of interest of image data set by the ROI setting unit and takes any one of average value and maximum value of the calculated CT values as a typical CT value of the region of interest.

12. The X-ray computer tomography apparatus according to any one of claims 1 and 5, wherein the ROI setting unit attaches an identifiable index to the region of interest in at least one of blood vessels at which a contrast medium arrives earliest and latest, respectively.

13. The X-ray computer tomography apparatus

according to claim 12, wherein the CT value display unit displays changes of CT values with time in the region of interest at which a contrast medium arrives earliest and latest, in a distinguished manner from the changes of CT values with time in other regions of interest.

14. The X-ray computer tomography apparatus according to claim 1, wherein the CT value display unit displays changes of difference with time between the CT values in regions of interest of the second image data and the CT values in regions of interest of the first image data or the initial-phase second image data.

15. The X-ray computer tomography apparatus according to claim 1, further including an image data storage unit, and wherein the CT value calculating unit calculates CT values in regions of interest newly set by the ROI setting unit in the second image data stored in the image data storage unit, and wherein the CT value display unit displays changes of CT values with time in the regions of interest retrospectively.

16. The X-ray computer tomography apparatus according to any one of claims 1 and 5, further including an image data display unit, and wherein the image data display unit separately displays the second image data and the second image data to which boundary lines of the regions of interest are attached.

17. An X-ray computer tomography apparatus comprising:

an X-ray source configured to irradiate X-rays into an object to be examined;

an X-ray detection unit configured to detect X-rays transmitted through the object;

a moving unit configured to move the object in a given direction;

an image data generation unit configured to generate image data on the basis of projection data from the object collected from the X-ray detection unit plural times, while moving the object by the moving unit;

a ROI setting unit configured to set at least one region of interest in the image data which is obtained by the image data generation unit; and

a CT value calculating unit configured to calculate CT values in the region of interest being set in the image data which is obtained by the image data generation unit, while generating the image data by the image data generation unit.

18. The X-ray computer tomography apparatus according to claim 17, further including a threshold setting unit configured to set threshold values for CT values and a CT value comparing unit configured to keep comparing CT values obtained by the CT value

calculating unit with the threshold values set by the threshold setting unit and to generate an instruction signal for stopping X-ray irradiation when both substantially agree.

19. An X-ray computer tomography apparatus comprising:

an X-ray source configured to irradiate X-rays onto an object to be examined from plural directions;

an X-ray detection unit configured to detect X-rays transmitted through the object;

a driving unit configured to rotate at least one of the X-ray source and the X-ray detection unit around the object;

a moving unit configured to move the object in a given direction;

an image data generation unit configured to generate image data on the basis of projection data from the object collected from the X-ray detection unit plural times while moving the object by the moving unit;

an ROI setting unit configured to set a region of interest in the image data generated by the image data generation unit;

a CT value calculating unit configured to calculate CT values, in pixels, in the region of interest of the image data, while generating the image data by the image data generation unit;

a range setting unit configured to set a range of the CT values;

a pixel number measuring unit configured to measure the number of pixels providing CT values which are calculated by the CT value calculating unit and which are contained within the range set by the range setting unit;

a threshold setting unit configured to set a threshold value for the number of pixels; and

a pixel number comparing unit configured to keep comparing the number of pixels obtained by the pixel number measuring unit with the threshold value of the number of pixels set by the threshold setting unit and to generate an instruction signal for stopping X-ray irradiation when both substantially agree.

20. The X-ray computer tomography apparatus according to claim 19, further including a pixel number display unit, and wherein the pixel number display unit displays changes of the number of pixels with time measured by the pixel number measuring unit.

21. A method of measuring CT values, comprising:

generating first image data which is obtained by an X-ray detection unit with respect to a position of a object to be examined, prior to injecting a contrast medium into the object;

setting a region of interest in the first image

data for calculating CT values;

generating second image data which is obtained by the X-ray detection unit plural times after injecting the contrast medium into the object; calculating CT values in the region of interest being set in the second image data on the basis of positional information of the region of interest set by the setting step, while generating second image data; and

displaying changes of the CT values with time which is obtained by the calculation.

22. A method of measuring CT values, comprising:

setting a region of interest for image data;

generating image data on the basis of projection data collected by using an X-ray source and an X-ray detection unit around a object to be examined plural times, while moving the object in a given direction by a moving unit;

calculating CT values in the region of interest being set in the image data on the basis of positional information of the region of interest set by the setting step, while generating the image data; and

ending scanning on the basis of the calculated CT values.